경영학 석사 학위논문

# The Effect of Financial Literacy and Capacity on the Demand for Life Insurance

## 금융 이해력과 역량이 생명보험수요에 미치는 효과

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이동준

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지도교수 박 소 정

이 논문을 경영학석사 학위논문으로 제출함

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위 원 장 석 승 훈 (인)

부위원장 이 관 휘 (인)

위 원 박 소 정 (인)

# Abstract

## The Effect of Financial Literacy and Capacity on the Demand for Life Insurance

Dong Jun Lee

College of Business Administration

The Graduate School

Seoul National University

The main purpose of this study is to scrutinize the effect of consumer's financial literacy and capacity on the demand for life insurance. This study uses the novel household survey data conducted by the Consumer Financial Protection Bureau (CFPB) of 2016. The paper finds evidence that consumer's financial literacy and capacity is positively related with a consumer's purchase of life insurance, and these are new critical factors in the life insurance demand model. Most of the prior research has focused on the life insurance purchase as a function of various socioeconomic and demographic variables associated with an individual's risk aversion.

However, this study focuses more on an individual's psychological and behavioral factors while controlling various socioeconomic and demographics variables. To measure a consumer's financial literacy

and capacity, CFPB newly introduces the objective and subjective financial knowledge, the propensity to plan, and financial socialization by conducting the survey.

Furthermore, the paper attempts to analyze the relationship between a consumer's financial literacy and capacity and financial well-being. The financial well-being score is construed as a proxy for consumer's expected utility to demonstrate that life insurance ownership induces an increment of consumer's expected utility as stated in the conventional insurance theory. However, due to the ongoing endogeneity and reverse causality problem, this hypothesis remains for future study.

*Key words*: Financial Literacy, Financial Capability, Life Insurance Demand, Financial Well-Being Score

*Student Number*: 2017-27347

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## I. Introduction

Since the global financial crisis of 2008, the degree of inequality around the world is at a record high. The World Bank states that a lack of financial literacy and capacity triggers the status quo (World Bank, 2015). The previous literatures keep warning that a lack of financial literacy and capacity leads an information asymmetry to

financial consumers, and this asymmetry causes serious behavioral biases to reach the suboptimal decision. Even if there is an issue in the transaction due to the suboptimal decision, consumers are not able to respond effectively or act promptly, resulting in financial loss and psychological problems (Bank of Korea, 2019). In other words, financial literacy and capacity is strongly correlated with this ongoing inequality (Kozup and Hogarth, 2008).

The world ends up acknowledging that the policy of providing financial education to consumers is critical. In particular, the Consumer Financial Protection Bureau (CFPB) in the United States has put an endless effort on understanding and measuring financial literacy and capacity (Bank of Korea, 2019). CFPB had failed to identify a yardstick to correlate with financial literacy and financial capacity; however, financial well-being is getting defined to use as a yardstick to assess the financial literacy and financial capacity since the end of 2014. CFPB finally finds the evidence that financial literacy and capacity is the determinant of financial well-being (CFPB, 2017). CFPB defines the financial well-being as "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow them to enjoy life" (CFPB, 2017).

A lack of financial literacy and capacity may also trigger a serious behavioral bias against the adequate demand for life insurance, causing an underinsured problem. This paper examines as to whether the consumer's financial literacy and financial capacity is not only

positively related with financial well-being, but also with a life insurance demand. In the CFPB's data of 2016, it encompasses not only respondent's socioeconomic and demographic variables, but also the questionnaires to assess the respondent's objective (Knoll and Hout score) and subjective financial knowledge, financial socialization, the propensity to plan, which are the main factors in this study. CFPB surveys with these questionnaires to use as the determinants of financial literacy and financial capacity. Most of the insurance demand studies have discovered several significant factors that lead to the demand for life insurance, such as socioeconomic and demographic variables associated with risk aversion (Burnett and Palmer, 1984). However, this paper is a first-attempt study to relate these factors construed as behavioral economics. And they show a positive significant correlation with life insurance demand model.

In addition, most of the previous empirical and theoretical literatures have paid all attention to corporate insurance, corporate hedging, and corporate risk management from a macro perspective to see an increment of firm value. However, the empirical study of risk management in individual level at a micro perspective has not been devoted yet. Furthermore, the effect of the purchase of life insurance on financial consumer's expected utility has not been clarified. The financial well-being score is used as a proxy to measure financial consumer's utility in this study. Since risk-averse consumer purchases a life insurance in order to avoid the future uncertainty, this behavior enhances the consumer's expected utility. However,

due to the ongoing endogeneity and reverse causality problem, this hypothesis has remained for the future study.

As mentioned earlier, the previous literatures are briefly discussed with regards to a demand study for life insurance, financial literacy and capacity, and corporate finance study in section 2 of this paper. Section 3 reviews the main variables of this paper and two main hypotheses. Data and empirical results are presented in section 4 and 5, respectively. The paper provides a conclusion and further comments on this study in the last section.

# II. Literature Review

## The Life Insurance Demand Study

The earlier life insurance demand studies investigate life insurance purchases mainly concerned with the microeconomic factors such as the demographics of households, and these socio-demographic variables are used to proxy risk aversion. According to the conventional insurance theory, a risk-averse individual purchases a life insurance to avoid the uncertainty of the future. By owning life insurance, the expected utility increases. That is, the relative of risk aversion (RRA) has a causal relationship with the demand for life insurance (Outreville, 2013).

One of the main reasons to purchase life insurance is to protect breadwinner's dependent against potential financial hardship or distress in the case of the breadwinner's premature death (Browne

and Kim, 1993). As a result, the presence of children is the most important factor in the life insurance demand model to distinguish a pure effect whether life insurance is purchased by its absolute necessity of the insured.

Likewise, Truett and Truett (1990) find the effect of an individual's age, education, and level of household income on the demand for life insurance. Since the prior researches have been constrained to the investigation of life insurance in less developed countries, the paper compares the demand for life insurance in Mexico with that in the United States. They conclude that the age distribution of the population is positively correlated with the demand for life insurance in both Mexico and the United States.

Besides, a few papers attempt to find the relationship between racial/ethnicity and the demand for life insurance. These studies examine as to whether race/ethnicity affect risk aversion, which positively influences the demand for life insurance. Siegel and Hoban (1991), Schooley and Worden (1996), Halek and Eisenhauer (2001) state that blacks and Hispanics are significantly less risk-averse than whites and other races. On the other hand, Sung and Hanna (1996) suggest that although black households earn less income and have less accumulated wealth than whites, whites are more likely to be willing to take a risk and invest on a risky asset. That demonstrates that the protection of these resources is even more important for Blacks (Gutter and Hatcher, 2008).

However, Burnet and Palmer (1984) state that "empirical research conducted on the topic of life insurance demand has produced mostly equivocal results and seems restricted to individual's demographics." The study has empirically validated that psychographic variables are more beneficial to predict numerous types of consumer's behavior and purchasing patterns than simple demographic. They find the evidence that individuals who are self-sufficient and believe they are well in control of their own wellbeing own greater amounts of life insurance.

In addition, Gottlieb and Mitchell (2019) find the evidence that, ceteris paribus, individuals who are subject to narrow framing purchase 25 to 66 percent less long-term care insurance than average. The paper states that "the narrow framing effect is an order of magnitude larger than the effect of adverse selection and risk aversion." To test the theory, the paper has developed and fielded a narrow frame for the Health and Retirement Study (HRS) to classify those people.

### Financial Literacy and Capacity

Rapid growth in household debt raises due to the individual's lack of financial knowledge. Only one-third of respondents across the U.S. population comprehend concepts of interest compounding in everyday situations. Financial illiterate individuals are more prone to experience over-indebtedness (Lusardi and Tufano, 2009). The

number of studies on delineating and understanding of financial literacy and capacity is increasing on and on recently.

Lin et al. (2017) find a noticeable difference in demand for life insurance by financial literacy, financial advisors, and information sources with the data from the literacy survey conducted by the Taiwan Financial Supervisory Commission (FSC) in 2011. Moreover, the paper finds evidence that Taiwan Financial Supervisory Commission education program make an increment of the demand for life insurance. Another empirical finding in the paper suggests that conversations with family members and friends are both positively associated with the demand for life insurance.

Furthermore, many empirical researches also kick off investigating the effect of consumer's financial capacity in various field. The propensity to plan is an indicator of financial capability. Lee and Kim (2016) aim to identify the role of the propensity to plan on retirement savings and asset accumulation from the 2013 Survey of Consumer Finances (SCF) dataset. When they perform ordinary least squares regressions, as the level of the propensity to plan increases, both retirement savings, and net worth increase. In other words, households with a greater propensity to plan accumulate more net worth that leads to the willingness to participate more actively in retirement savings, consisting of individual retirement accounts, Keogh accounts, and other pension accounts.

In addition, Lee et.al (2019) investigate the relationship between financial knowledge and financial well-being to validate financial knowledge is positively associated with financial well-being. Furthermore, the study includes the moderating role of propensity to plan. After controlling other base variables, financial knowledge and propensity to plan are positively related with financial wellbeing.

How well an individual is financially educated and disciplined from his/her parents can be another factor to enhance his/her financial capacity. Manfre (2017) shows that financial socialization received early in life is positively associated with general saving habits. Furthermore, the effect of parent's financial socialization on the development of children's self-control skills is a noticeable result in the paper.

### Corporate Finance

Most of the previous empirical and theoretical literature put an endless effort to hedge and manage a firm's risk from a macro perspective to increase the firm value. Insurance is the highest percent of products that the firms are taking in order to manage their own financial and pure risks more effectively and efficiently. For example, Hwang and Kim (2016) examine the effect of directors' and officers' liability (D&O) insurance on firm value. They utilize a sample of quoted Korean companies based on the period in which disclosure of D&O insurance policy information becomes mandatory. The paper finds the evidence that D&O insurance increases firm

value compared to noninsured firms. It also finds that D&O insurance provides firms with better growth opportunities, which converts into higher firm value.

Interestingly, weather derivatives are used to manage and hedge the firm's risk. Perez et al. (2013) identify the fact that weather derivatives are used as an exogenous shock to the firm's ability to hedge weather risks. They conclude that they find the evidence derivatives cause higher valuations, investment, and leverage. That is, firms tend to pay all attention to manage their risk from a macro level. Empirical studies show risk management leads to real consequences on firm value.

However, the risk management of the individual level at a micro perspective has not been explored enough yet. The empirical study to exploit the effect of the insurance demand on consumer's expected utility is an example of risk management at a micro level. Most of the theoretical studies have covered this hypothesis with a certain assumption that is the price of insurance is equal. This hypothesis can be another empirical research question.

## III. Hypothesis

The inequality of financial knowledge, the propensity to plan, and financial socialization among financial consumers may trigger a serious behavioral bias and end up with being underinsured. In other words, individuals do not make an optimal decision and miss their "true" expected utility. As a result of that, they will regret the

decisions that they made in the first period *ex-post* (Cremer and Roeder, 2012). Following provides several reasons as to why each variable is an important factor to the life insurance demand model:

Propensity to Plan

According to the theory of the propensity to plan, households have control problems in matching with their long-term motives and current actions. Furthermore, they have different attitudes and aptitudes that enable them to assist in achieving long-term goals. Thus, the propensity to plan reflects the intentional efforts made to alleviate the conflict between future utility and present satisfaction (Lee and Kim 2016). Moreover, Gottlieb and Mitchell (2019) empirically test that a narrow framing causes insurance underinsured. Therefore, a myopic individual who has a lower propensity to plan has a tendency to demand life insurance less likely.

Financial Knowledge

Generally, a life insurance policy is confusing and complicated to fully comprehend. Thus, individuals who are in need of life insurance fail to purchase life insurance adequately due to a lack of financial knowledge. Dalkilic and Kirkbesoglu (2015) empirically examine the relationship between financial literacy and insurance awareness over 400 university students from a different financial academic background. They find the evidence that the differences between insurance awareness of students who took finance courses and the non-finance course are statistically significant. Furthermore,

subjective financial knowledge refers to the individual's confidence, which is positively correlated with an individual's financial and risk managing behaviors, such as purchasing life insurance (Robb and Woodyar, 2011). That demonstrates the objective and subjective financial knowledge have a positive association with the demand for life insurance.

Financial Socialization

Financial Socialization is defined as "the process of acquiring and developing values, attitudes, standards, norms, knowledge, and behaviors that contribute to the financial viability and individual well-being" (Danes, 1994). In addition, financial education from parents in early may affect individuals' saving behavior (Manfre, 2017). Financial socialization is a reflection of an individual's saving behavior, which directly connects to the demand for life insurance. To sum up, the following behavior hypothesis is the main hypothesis of this study:

*Hypothesis 1: Objective and subjective financial knowledge, the propensity to plan, and financial socialization have a positive significant relationship with a life insurance demand.*

Furthermore, of the individuals who do need life insurance, these financial literacy and capacity variables make more pronounced to the demand model. As explained earlier, the presence of children that the individual supports financially is critical to life insurance demand. Therefore, the adequacy of life insurance is an important aspect of

understanding and delineating the reasons why these factors are more pronounced to the model.

*Hypothesis 2: Objective and subjective financial knowledge, the propensity to plan, and financial socialization are more pronounced to the individual who has children to support financially.*

## IV. Data

The paper uses the 2016 National Financial Well-Being Survey (NFWBS) that the Consumer Financial Protection Bureau (CFPB) releases. The survey dataset encompasses respondent's financial wellbeing, as well as measures of individual and household characteristics 1) income and employment 2) savings and safety nets 3) past financial experiences 4) financial behaviors, skills, and attitudes. The main survey is conducted between October and December 2016. The survey dataset originally includes 6394 respondents. However, after dropping out those who picked "refused" or "response not written to the database," 5447 respondents have left and are used. Since NFWBS study weights to represent the US population, the summary statistics and logistics regression that the paper employs are weighted. In summary, the CFPB survey data is a snapshot cross-section data as of the time between October and December 2016.

### Dependent Variable

Since each hypothesis has a different dependent variable, two dependent variables are used in this study: one for whether a

respondent holds life insurance (dummy variable). The life insurance in the given data is an aggregate level that cannot be compared apples to apples, or which is which. Furthermore, the price of the life insurance that the respondent holds is missing in the data; the other for financial wellbeing score scaled by the CFPB. To score respondent's financial wellbeing, 10 questions are asked and is based on four elements: 1) control over daily and monthly finances; 2) capacity to absorb a financial shock; 3) on track to meet financial goals; 4) the financial freedom to make choices.

### Key Independent Variables

*Objective and Subjective Financial Knowledge*

This study includes objective and subjective financial knowledge in the logistics regression model. For the objective financial knowledge, Knoll-Houts financial knowledge scale score, also known as KH score, is used. According to CFPB, KH score is scaled by the method of item response theory (IRT) which is popularly used in the field of psychometric. And CFPB includes the score ranged from −2.023 to 1.267. The questionnaires of this financial knowledge test are listed in the appendix E. Furthermore, the subjective financial knowledge is based on the respondent's answer to the following question: "How would you assess your overall financial knowledge?" And it is measured on a 7-point scale.

*Propensity to Plan*

This study uses four propensity to plan items (questions) given by the CFPB dataset. Since the CFPB does not include a specific method to measure an index of individuals' propensity to plan, this study constructs an index of propensity to plan. Our approach is similar to the method reported by the prior researches. The index is combined linearly by using a principal component analysis (PCA). The PCA result is shown in appendix C. The first of principal components is extracted with eigenvalues greater than one. The principal component accounts for approximately 69.36% of the total variation in the responses to the propensity to plan questionnaires. Each item shows a positive component score.

*Financial Socialization*

The respondents are asked seven questions in terms of disciplines and teachings received from their family while growing up at home. The answers to these questions are collected by CFPB to measure financial socialization. The paper retains a unique index representing financial socialization by employing a factor analysis with a tetrachoric correlation on those by binary variables as performed in the exact same way from the previous literature. The scores of the factor analysis account for approximately 63.05% of the total variance in the responses to the financial socialization questionnaires. The eigenvalue is greater than one; each score is positively associated with the calculated index. The result of the factor analysis with tetrachoric correlation is in appendix D.

[Insert Table 1.]

## V. Empirical Results

The first model in table 2 encompasses only the key variables to check the effectiveness of the variables in the demand for a life insurance model. As expected, the variables are statistically significant and show a positive association with the demand for life insurance. When the factors are included in the baseline model, which includes the respondent's socioeconomic and demographic variables, the predicting model becomes more beneficial to predict the probability than before by approximately 0.88%. And all these factors are positively and statistically significant. These are only effective on the life insurance model as compared to the health insurance model which is seen in model 3.

Noticeably, of these factors, the propensity to plan and the subjective financial knowledge are not statistically significant in the health insurance model. It can be explained that the behavioral and psychological difference triggers the result. As explained earlier in the literature review, Gottlieb and Mitchell (2019) find the evidence that ceteris paribus, individuals who are subject to narrow framing have a lower probability to purchase long-term care insurance than whom have broad framing. Likewise, a short-term need may be more attractive to myopic, and narrow framing individuals (Mitchel, 2003).

Furthermore, Robb and Woodyar (2011) state that subjective financial knowledge is positively correlated with an individual's

financial behavior which is a proper risk managing behaviors such as purchasing life insurance. The result of the model 2 in table 2 shows the same consequence with the prior research.

The paper standardizes the independent variables to check the potential multicollinearity problem. Standardizing the independent variable is a simple method to reduce multicollinearity. The result in the appendix A table shows that the objective and subjective financial knowledge, the propensity to plan, and financial socialization are still positively significant.

[Insert Table 2.]

The federal poverty level (FPL) is a measure of income issued every year by the Department of Health and Human Services (HHS). On top of that, federal poverty level determines individual's eligibility for certain programs and benefits such as savings on Marketplace health insurance and Medicaid and the Children's Health Insurance Program (CHIP). The federal poverty level (guideline) provides an estimate of the number of people who are poor, the percentage of people living below the poverty level, the poverty distribution by age, sex, ethnicity, and location. Furthermore, federal poverty level is based not only on income, but also on family size. According to Healthcare.gov, the household income is divided by the poverty guideline and multiply by 100 to calculate the percentage of the poverty level. The calculated number will be placed somewhere between 0% and 400%.

CFPB (2017) looks at the relationship between financial well-being and income through a different perspective by the federal poverty level. Individuals whose household incomes are under the federal poverty level have an average financial well-being score of 45, as compared to 49 for individuals whose household incomes are between 100 and 200 percent of the federal poverty level. Moreover, individuals whose household incomes are more than 200 percent of the federal poverty level get 57.

However, the distributions of financial well-being for the first two groups (under 100% and 100-200%) overlap significantly. CFPB explains that there may be compensations or strategies that help individuals whose household incomes are under the poverty level (under 100%) exceed the financial well-being of those with incomes between 100-200 percent of the poverty level. One of the reasons is that individuals who are less than 100% of the poverty level may qualify for a greater number of means-tested social safety net programs (CFPB, 2017). On the other hand, the amount of overlap between these two subgroups and individuals who are over 200% of the poverty level is very low.

Table 3 employs logistic regression by federal poverty level. This study breaks the federal poverty into two subgroups: one for at or below the 200%; the other for over 200% as explained in the CFPB report. The first group whose household income is at or below 200% of the poverty level has 1269 respondents, and the other group has 4178 respondents. It seems to be that the propensity to plan and the

subjective financial knowledge are not important factors in the first group. However, the entire factors influence on the second group whose household income is over 200% of the poverty level.

Consistently, no matter which poverty level individuals are in, the propensity to plan and the subjective financial knowledge are not significant in the health insurance demand model.

[Insert Table 3.]

As explained earlier, the second hypothesis of this paper is that objective and subjective financial knowledge, the propensity to plan, and financial socialization are more pronounced to the individual who has children to support financially than those who have not. In order to check the hypothesis, the interaction term is performed. The main purpose of the demand for life insurance is to protect breadwinner's dependent against potential financial hardship or distress in the case of the breadwinner's premature death (Browne and Kim, 1993).

The presence of children that the respondent should support financially can be a major factor for the demand for life insurance. The dummy variable of the presence of children is literally asking to the respondent whether he/she has children to support financially. This dummy variable can distinguish a pure effect whether life insurance is purchased by its absolute necessity of the insured. Furthermore, interaction with these four financial literacy and capacity variables shows the evidence that KH score increases the possibility of the respondents who have children to support

financially to hold life insurance. That is, the interaction term provides a moderating effect. However, the interaction with financial socialization seems not effective on a life insurance holding. Moreover, it shows a negative sign in the life insurance model. When the respondent who has children to support financially has a greater propensity to plan financially, he/she is more willing to hold life insurance. Likewise, when the same characteristic individual has more confidence in the ability toward his/her financial knowledge, the individual purchases life insurance. The results are consistent with the adequacy hypothesis of this paper.

As did in table 3, the logistic regression with the interaction terms is employed by the federal poverty level. Interestingly, when the respondent who has to support his or her children financially shows a higher score of financial socialization, it'd rather affect the respondent's demand for life insurance inversely.

[Insert Table 4.]

The understanding of adequacy of life insurance coverage is an important aspect of the empirical study to avoid the selection bias. Mitchel (2003) states that households whose ages are under 25 and over age 65 are excluded since they have limited income protection needs. Furthermore, some combinations are very unlikely in the given data such as young households under 25 with high household incomes. In addition, the likelihood that parents of the individuals under 25 have purchased life insurance for their children on the

behalf is very high. Likewise, the likelihood of vice versa is also high for the individual whose age is over 65 which is the average age of retirement. It is difficult to interpret that these behavioral economic variables affect the respondents who are already retired or reaching the retirement age.

Excluding respondents over 65 exactly is not feasible due to the data limit. The most updated data provides the age range of 62-69. For that reason, the respondents under 25 and over 69 are excluded from the data. The number of the respondents under 25 is 379. Of 379 respondents, the respondents who do not hold a life insurance is 81.79%. And the number of the respondents over 69 is 583. Of 583 respondents who does not hold life insurance is 43.57%. Therefore, 962 out of 5447 respondents are excluded from this table. The factors are still strongly significant and strengthen the explanatory power of the demand model in this study.

[Insert Table 5.]

## Robustness

Knoll-Houts financial knowledge score (KH score) is used to measure the respondent's objective financial knowledge in this study. CFPB measures financial knowledge with the 10-item version of Knoll-Houts Financial Knowledge Scale from the understanding of long-term returns on investment to the understanding of mortgage term length on total interest paid. However, of the 9 questions, the respondent is asked to check whether he/she is generally

understanding of life insurance, which is "Whole life's insurance has a savings feature while 'term' insurance does not." The paper considers this item or question can be a factor that triggers a serious bias, meaning the understanding of life insurance question can explain the explanatory power of the whole objective financial knowledge.

This study excludes the questionnaire of the understanding of life insurance. Since Knoll-Houts as well as the prior researches use the item response theory (IRT), this paper also analyzes the rest of the items with a method of IRT by using a statistical software SAS. The paper uses a unique index made by SAS.

As seen in the table5, the paper successfully gets a pure effect by breaking the objective financial knowledge into two variables. The result demonstrates that even if there is no item asking whether the respondent fully understands life insurance, the general financial knowledge positively influences the likelihood of holding life insurance. Interestingly, when the interaction term is employed, the understanding of life insurance does not affect the demand for life insurance. That is, the understanding of life insurance is not an important factor to make the individual who has children to support financially purchase life insurance. Furthermore, financial socialization still seems not as effective as a predictor of the demand for life insurance when the interaction is executed.

[Insert Table 6.]

The first logistic regression table, which is in the table2 shows that

it seems the objective financial knowledge and financial socialization are significant factors; however, the propensity to plan and the subjective financial knowledge do not impact on the demand for health insurance. Table 2 only checks the behavior hypothesis in the health insurance model. The table7 validates the adequacy hypothesis, which uses the interaction term.

As expected, when the same interaction term is employed, the newly introduced factors are not significant in the health insurance. That concludes the interaction terms are only effective on the life insurance model. Additionally, the health insurance model is executed by the federal poverty level. When the respondent who has children to support financially has a higher propensity to plan, it alleviates the possibility of the demand for health insurance in the range of 0~ 199% of the poverty level.

Furthermore, when the respondent who has to support his/her children financially shows a higher KH financial knowledge score, it also reduces the likelihood of the demand for health insurance. These results are exactly opposite results with the demand life insurance model.

[Insert Table 7.]

The last table of this paper is the purpose of validation that holding life insurance increases the consumer's financial well-being score. As explained earlier, the paper attempts to proxy the financial well-being score as the consumer's expected utility. The serious

endogeneity problem or reverse casualty appears when the ordinary least square (OLS) regression is performed. The paper fails to find the instrumental variable to execute 2SLS in the given data. Moreover, holding life insurance does not affect the financial well-being score significantly. But the coefficient of holding life insurance has a positive association with financial well-being score.

Interestingly, the demand for life insurance is more powerful to the financial well-being score to the respondent whose household income is below 200% of the federal poverty level. This paper cannot process further steps with the given data, so this hypothesis remains to further development or studies. For that reason, this study puts this table into appendix A.

[Insert Appendix B.]

## VI. Conclusion

The paper finds the evidence that the disparity of consumer's financial literacy and capacity can trigger the inequality of the demand for life insurance. In other words, a lack of financial literacy and capacity hinders the proper demand. However, four financial literacy and capacity variables which are objective financial knowledge (KH score), subjective financial knowledge, the propensity to plan, and financial socialization are positively associated with the demand for life insurance even after controlling for the respondent's socioeconomic and demographic variables.

Furthermore, the empirical results show that these variables are more pronounced to the respondent who has children to support financially. By comparing with the health insurance model, the paper concludes that these variables are only effective and significant in the life insurance model.

However, the dummy variable of asking whether the respondent owns life insurance or not that the paper has used is an aggregate level of life insurance. That means the paper cannot clarify the two questions: 1, which type of life insurance is purchased; 2. What amount of life insurance the respondent currently holds. In order to identify the pure effect of these variables, the paper should postulate that life insurance is being compared apples to apple. Moreover, the amount of life insurance is needed for the robustness check.

The price of life insurance is another problem in this study. This study aims to scrutinize the effect of financial literacy and capacity on the demand for the life insurance model. The absence of price which is the main factor of the supply–demand model is critical that may cause a serious biased consequence. However, CFPB's dataset does not encompass the detail of life insurance what the respondent holds. In order to alleviate the outstanding problem, this study attempts to use enough control variables as possible as it can. Furthermore, the paper considers that the association of price with the demand for life insurance is another research question that is neglected in this study. Lastly, the paper cites the previous literature when selecting the sample. However, performing a test of Hackman

can be another statistical method to reduce the potential selection bias problem.

To sum up, this paper finds the evidence that people with better financial knowledge, better financial socialization, and a greater propensity to plan do make better insurance demand. Furthermore, when these factors are included in the baseline insurance model, the predicting power of the demand model has increased by 0.88%, which comes from the value of pseudo R squared. And, the new research question, which is "does adequate insurance enhance consumer's financial well-being?" has left to the researchers who analyze the consumer's financial well-being for future studies.

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# 논문 초록

## 금융 이해력과 역량이 생명보험 수요에 미치는 효과

본 연구에서는 금융소비자보호원(CFPB)의 금융웰빙 설문조사 데이터를 이용하여 금융소비자의 금융 이해력과 역량의 차이는 금융 웰빙지수만이 아닌, 보험 가입을 저해하는 중요한 행동경제학적 요소임을 밝혔다. 금융 이해력과 역량을 측정하는 변수로 CFPB 는 생활 주기 모델에 중요한 변수인 응답자의 객관적/주관적 금융 지식, 계획 성향, 그리고 재무적 사회화를 이용하였다. 이러한 변수들을 생명보험 수요 연구모델에 새롭게 추가하여 필요성을 보여주었다. 또한, 현재까지 많은 이론 및 실증 논문들에서 기업보험, 기업 헤지, 그리고 기업 위험관리를 통한 회사 가치의 증가라는 거시적 측면의 연구를 보았지만, 미시적 측면의 위험관리에 관한 연구는 아직 미흡한 상황이다. 보험구매가 실제로 금융소비자의 기대효용에 어떠한 영향을 미치는지에 관한 연구를 금융 웰빙지수를 이용하여 밝혀내고자 하였으나, 모델안에서의 내생성과 역인과관계의 문제를 해결하지 못하여 다음 연구주제로 남겨두었다.

국문색인어: 금융 이해력과 역량, 생명보험수요, 금융웰빙지수

학번: 2017-27347

**Table 1.** Summary Statistics of Variables

| | Observations | life Insurance | No-life Insurance | Difference | Health Insurance | No-Health Insurance | Difference |
|---|---|---|---|---|---|---|---|
| Variables | N | Percentage/Mean | | t-test | Percentage/Mean | | t-test |
| Life/Health | 5447 | 52.65 | 47.35 | 77.82 | 71.65 | 28.35 | 117.33 |
| Dependent variable | | | | | | | |
| Financial well-being | 5447 | 56.89 | 51.09 | 16.00 | 56.02 | 49.52 | 16.81 |
| Key variable | | | | | | | |
| KH objective financial knowledge | 5447 | 0.04 | -0.33 | 17.79 | 0.02 | -0.49 | 23.03 |
| Subjective financial knowledge | 5447 | 4.83 | 4.40 | 13.32 | 4.73 | 4.36 | 10.84 |
| Propensity to Plan | 5447 | 0.13 | -0.12 | 5.72 | 0.02 | -0.04 | 1.29 |
| Financial Socialization | 5447 | 0.68 | 0.62 | 5.97 | 0.68 | 0.59 | 8.19 |
| Children that I support financially | 5447 | 61.67 | 38.33 | 11.34 | 73.31 | 26.69 | 3.42 |
| Homeownership | 5447 | 63.62 | 36.38 | 25.54 | 80.73 | 19.27 | 20.92 |
| Non-Retirement Investment | 5447 | 65.67 | 34.33 | 14.94 | 86.87 | 13.13 | 17.34 |
| Age | | | | | | | |
| 18-24 | 379 | 18.21 | 81.79 | -15.82 | 48.02 | 51.98 | -10.44 |
| 25-34 | 1046 | 43.59 | 56.41 | -6.25 | 67.21 | 32.79 | -2.73 |
| 35-44 | 777 | 53.80 | 46.20 | 2.00 | 70.01 | 29.99 | 0.18 |
| 45-54 | 1016 | 60.04 | 39.96 | 7.54 | 73.03 | 26.97 | 2.50 |
| 55-61 | 669 | 61.88 | 38.12 | 5.30 | 74.89 | 25.11 | 2.47 |
| 62-69 | 977 | 58.55 | 41.45 | 3.87 | 77.79 | 22.21 | 4.17 |
| 70+ | 583 | 56.43 | 43.57 | 2.02 | 80.79 | 19.21 | 4.03 |
| Household Income | | | | | | | |
| $0 to $29,999 | 984 | 26.12 | 73.88 | -18.77 | 42.38 | 57.62 | -22.36 |
| $30,000 to $49,999 | 875 | 45.26 | 54.74 | -4.92 | 64.11 | 35.89 | -5.74 |
| $50,000 to $74,000 | 994 | 54.33 | 45.67 | 2.07 | 76.96 | 23.04 | 3.97 |
| $75,000 to $ 99,999 | 821 | 60.41 | 39.59 | 3.87 | 79.78 | 20.22 | 5.25 |
| $100,000 to $149,999 | 977 | 64.69 | 35.31 | 7.80 | 84.03 | 15.97 | 9.39 |
| $150,000 or more | 796 | 68.72 | 31.28 | 11.18 | 85.93 | 14.07 | 10.68 |
| Education | | | | | | | |
| less than high school | 345 | 26.09 | 73.91 | -12.68 | 39.71 | 60.29 | -14.00 |
| High school diploma | 1305 | 45.52 | 54.48 | -6.27 | 62.22 | 37.78 | -7.99 |
| some college | 1683 | 51.57 | 48.43 | 0.12 | 69.28 | 30.72 | -1.07 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Bachelor's degree | 1164 | 59.97 | 40.03 | 8.75 | 83.16 | 16.84 | 12.17 |
| Post-Bachelor's degree | 950 | 65.05 | 34.95 | 9.73 | 86.32 | 13.68 | 10.87 |
| Racial/ethnic status | | | | | | | |
| Whites | 3790 | 57.18 | 42.82 | 11.59 | 78.47 | 21.53 | 17.81 |
| Blacks | 586 | 56.41 | 43.59 | 0.61 | 61.95 | 38.05 | -4.45 |
| Hispanics | 769 | 33.16 | 66.84 | -12.89 | 48.24 | 51.76 | -15.90 |
| Asians/others | 302 | 44.04 | 55.96 | -3.77 | 64.57 | 35.43 | -4.33 |
| Employment Status | | | | | | | |
| Self-employed | 488 | 45.90 | 54.10 | -2.67 | 64.75 | 35.25 | -3.88 |
| Salaried worker | 2450 | 61.63 | 38.37 | 13.27 | 78.33 | 21.67 | 11.78 |
| No work | 242 | 21.07 | 78.93 | -10.68 | 42.15 | 57.85 | -10.69 |
| Retired | 1267 | 55.72 | 44.28 | 2.73 | 79.56 | 20.44 | 5.57 |
| Marital Status | | | | | | | |
| Married | 3285 | 63.84 | 36.16 | 22.79 | 79.03 | 20.97 | 15.76 |
| Single | 1053 | 28.77 | 71.23 | -18.99 | 56.03 | 43.97 | -12.46 |
| Partner | 341 | 34.90 | 65.10 | -6.51 | 60.70 | 39.30 | -4.63 |
| Separated/Divorced/ Widowed | 768 | 45.44 | 54.56 | -4.01 | 66.41 | 33.59 | -3.72 |
| Location | | | | | | | |
| West | 1286 | 44.32 | 55.68 | -6.85 | 69.52 | 30.48 | -2.28 |
| South | 1909 | 54.58 | 45.42 | 2.72 | 68.88 | 31.12 | -3.54 |
| Northeast | 990 | 53.03 | 46.97 | 0.49 | 75.35 | 24.65 | 3.31 |
| Midwest | 1262 | 57.92 | 42.08 | 3.42 | 75.12 | 24.88 | 3.47 |
| Gender | | | | | | | |
| Male | 2874 | 52.96 | 47.04 | -3.24 | 71.92 | 28.08 | -1.92 |
| female | 2573 | 52.31 | 47.69 | 3.24 | 71.36 | 28.64 | 1.92 |
| MSA status | | | | | | | |
| Metro | 4724 | 52.20 | 47.80 | -2.72 | 71.49 | 28.51 | -1.12 |
| Non-Metro | 723 | 55.60 | 44.40 | 2.72 | 72.75 | 27.25 | 1.12 |
| Poverty Status | | | | | | | |
| Poverty <200% FPL | 1269 | 28.05 | 71.95 | -21.27 | 44.05 | 55.95 | -24.87 |
| Poverty +200% FPL | 4178 | 60.12 | 39.88 | 21.27 | 80.04 | 19.96 | 24.87 |

Mean = Weighted / PCT = Not Weighted

**Table 2.** Logistics Regression Models with key variables (Life Insurance & Health Insurance)

| Variables | Model1 (Life Insurance) | | | Model2 (Life Insurance, w/ Key) | | | Model3 (Health Insurance, w/ Key) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio |
| KH score | 0.3440 | <.0001 | 1.4106 | 0.1094 | 0.0002 | 1.1156 | 0.1970 | <.0001 | 1.2177 |
| Financial Socialization | 0.0826 | 0.0593 | 1.0861 | 0.1922 | 0.0001 | 1.2119 | 0.1866 | 0.0003 | 1.2051 |
| Propensity to Plan | 0.0300 | 0.0085 | 1.0305 | 0.0379 | 0.0023 | 1.0386 | -0.0013 | 0.9211 | 0.9987 |
| Subjective FK | 0.1287 | <.0001 | 1.1373 | 0.0411 | 0.0193 | 1.0420 | 0.0111 | 0.5293 | 1.0112 |
| Children that I support financially | | | | 0.1834 | <.0001 | 1.2013 | -0.0226 | 0.6246 | 0.9777 |
| Homeownership | | | | 0.2384 | <.0001 | 1.2692 | 0.1752 | 0.0004 | 1.1915 |
| Non-Retirement Investment | | | | 0.0947 | 0.0451 | 1.0993 | 0.2421 | <.0001 | 1.2739 |
| Age (ref: 70 years or older) | | | | | | | | | |
| 18-24 | | | | -0.7749 | <.0001 | 0.4607 | -0.3362 | 0.0103 | 0.7145 |
| 25-34 | | | | -0.3831 | 0.0003 | 0.6817 | -0.0774 | 0.5075 | 0.9255 |
| 35-44 | | | | -0.2829 | 0.0091 | 0.7536 | -0.1087 | 0.3580 | 0.8970 |
| 45-54 | | | | -0.1168 | 0.2530 | 0.8898 | -0.1179 | 0.2931 | 0.8888 |
| 55-61 | | | | -0.0889 | 0.3709 | 0.9149 | -0.1149 | 0.2941 | 0.8915 |
| 62-69 | | | | -0.0261 | 0.7630 | 0.9742 | -0.0461 | 0.6358 | 0.9549 |
| Household Income (ref: $0 to $29,999) | | | | | | | | | |
| $30,000 to $49,999 | | | | 0.2235 | 0.0005 | 1.2504 | 0.2356 | 0.0001 | 1.2657 |
| $50,000 to $74,000 | | | | 0.3501 | <.0001 | 1.4192 | 0.4356 | <.0001 | 1.5459 |
| $75,000 to $ 99,999 | | | | 0.3703 | <.0001 | 1.4482 | 0.4423 | <.0001 | 1.5563 |
| $100,000 to $149,999 | | | | 0.4313 | <.0001 | 1.5393 | 0.5101 | <.0001 | 1.6655 |
| $150,000 or more | | | | 0.4959 | <.0001 | 1.6420 | 0.4285 | <.0001 | 1.5350 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Education (ref: less than high school) | | | | | | |
| High school diploma | 0.1256 | 0.0840 | 1.1338 | 0.0271 | 0.6864 | 1.0275 |
| some college | 0.2306 | 0.0021 | 1.2594 | 0.0966 | 0.1668 | 1.1014 |
| Bachelor's degree | 0.2086 | 0.0129 | 1.2320 | 0.2874 | 0.0005 | 1.3330 |
| Post-Bachelor's degree | 0.1931 | 0.0393 | 1.2130 | 0.2932 | 0.0026 | 1.3407 |
| Racial/ethnic status (ref: Whites) | | | | | | |
| Blacks | 0.2255 | 0.0004 | 1.2529 | -0.0592 | 0.3537 | 0.9425 |
| Hispanics | -0.2978 | <.0001 | 0.7424 | -0.4274 | <.0001 | 0.6522 |
| Asians/others | -0.1489 | 0.0314 | 0.8617 | -0.3971 | <.0001 | 0.6723 |
| Employment Status (ref: Self-employed) | | | | | | |
| Salaried worker | 0.3175 | <.0001 | 1.3737 | 0.2638 | <.0001 | 1.3019 |
| No work | -0.3195 | 0.0015 | 0.7265 | -0.2322 | 0.0075 | 0.7928 |
| Retired | -0.0681 | 0.3716 | 0.9342 | 0.1465 | 0.0745 | 1.1578 |
| Marital Status (ref: Married) | | | | | | |
| Single | -0.3970 | <.0001 | 0.6723 | -0.2299 | 0.0002 | 0.7946 |
| Partner | -0.3131 | <.0001 | 0.7312 | -0.1923 | 0.0161 | 0.8251 |
| Separated/divorced/widowed | -0.2837 | <.0001 | 0.7530 | -0.1492 | 0.0143 | 0.8614 |
| Location (ref: South) | | | | | | |
| West | -0.2298 | <.0001 | 0.7947 | 0.0733 | 0.1512 | 1.0761 |
| Northeast | -0.0425 | 0.4229 | 0.9584 | 0.1770 | 0.0015 | 1.1936 |
| Midwest | 0.0392 | 0.4406 | 1.0400 | 0.1147 | 0.0317 | 1.1215 |
| Gender (ref: Female) | | | | | | |
| Male | -0.1431 | 0.0002 | 0.8667 | -0.1204 | 0.0026 | 0.8866 |
| Metropolitan | -0.1238 | 0.0259 | 0.8836 | -0.0567 | 0.3274 | 0.9449 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Intercept | | -0.5156 | 0.0006 | 0.5971 | 0.0022 | 0.9885 | 1.0022 |
| Pseudo R-sq. | 0.0759 | | 0.2285 | | | 0.2037 | |
| N | 5447 | | 5447 | | | 5447 | |
| Value Weighted | | | | | | | |

**Table 3.** Logistics Regression Models by Poverty Status, Federal Poverty Levels (Life Insurance & Health Insurance)

| Variables | Model4 (Life Insurance, FPL < 200%) | | | Model5 (Life Insurance, FPL + 200%) | | | Model6 (Health Insurance, FPL < 200%) | | | Model7 (Health Insurance, FPL + 200%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio |
| KH score | 0.1151 | 0.0615 | 1.1220 | 0.0989 | 0.0029 | 1.1040 | 0.1585 | 0.0044 | 1.1718 | 0.2096 | <.0001 | 1.2332 |
| Financial Socialization | 0.2687 | 0.0078 | 1.3083 | 0.1741 | 0.0028 | 1.1902 | 0.2053 | 0.0244 | 1.2279 | 0.1939 | 0.0022 | 1.2140 |
| Propensity to Plan | 0.0336 | 0.1857 | 1.0342 | 0.0412 | 0.0044 | 1.0421 | 0.0144 | 0.5242 | 1.0145 | -0.0094 | 0.5521 | 0.9906 |
| Subjective FK | 0.0124 | 0.6951 | 1.0125 | 0.0534 | 0.0141 | 1.0549 | -0.0198 | 0.4855 | 0.9804 | 0.0257 | 0.2679 | 1.0260 |
| Children that I support financially | 0.0851 | 0.3875 | 1.0888 | 0.2442 | <.0001 | 1.2766 | -0.1509 | 0.0920 | 0.8599 | 0.0467 | 0.4104 | 1.0478 |
| Homeownership | 0.3400 | 0.0001 | 1.4049 | 0.1658 | 0.0050 | 1.1803 | 0.1299 | 0.1167 | 1.1387 | 0.1844 | 0.0039 | 1.2025 |
| Non-Retirement Investment | 0.3292 | 0.0268 | 1.3899 | 0.0810 | 0.1069 | 1.0844 | 0.2264 | 0.1216 | 1.2541 | 0.2475 | <.0001 | 1.2808 |
| Intercept | -0.1900 | 0.4676 | 0.8270 | -0.3354 | 0.2080 | 0.7151 | 0.3649 | 0.1364 | 1.4404 | -0.0378 | 0.8917 | 0.9629 |
| Control Variables | | Y | | | Y | | | Y | | | Y | |
| Pseudo R-sq. | | 0.1887 | | | 0.1704 | | | 0.1531 | | | 0.1199 | |
| N | | 1269 | | | 4178 | | | 1269 | | | 5447 | |
| Value Weighted | | | | | | | | | | | | |

**Table4.** Interaction term with a variable of 'Children that I support financially'

| Variables | Model8 (Total) | | | Model9 (FPL < 200%) | | | Model10 (FPL +200%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio | Estimate | Pr > ChiSq | odd ratio |
| KH score | 0.0660 | 0.0560 | 1.0682 | 0.0558 | 0.4780 | 1.0574 | 0.0757 | 0.0551 | 1.0786 |
| KH score * Children to support | 0.1164 | 0.0260 | 1.2001 | 0.1749 | 0.1317 | 1.2595 | 0.0640 | 0.3101 | 1.1499 |
| Financial Socialization | 0.2272 | 0.0004 | 1.2551 | 0.5056 | 0.0002 | 1.6580 | 0.1782 | 0.0145 | 1.1951 |
| Financial Socialization * Children to support | -0.1030 | 0.2936 | 1.1322 | -0.5552 | 0.0057 | 0.9516 | -0.0125 | 0.9137 | 1.1802 |
| Propensity to Plan | 0.0221 | 0.1611 | 1.0223 | 0.0343 | 0.3144 | 1.0349 | 0.0209 | 0.2476 | 1.0211 |
| Propensity to Plan * Children to support | 0.0428 | 0.0910 | 1.0671 | 0.0129 | 0.7994 | 1.0483 | 0.0559 | 0.0613 | 1.0798 |
| Subjective FK | 0.0193 | 0.3849 | 1.0195 | -0.0561 | 0.1823 | 0.9454 | 0.0470 | 0.0805 | 1.0481 |
| Subjective FK * Children to support | 0.0670 | 0.0590 | 1.0901 | 0.1699 | 0.0081 | 1.1205 | 0.0230 | 0.6058 | 1.0725 |
| Children that I support financially | -0.1236 | 0.4929 | 0.8837 | -0.2699 | 0.3868 | 0.7635 | 0.1265 | 0.5872 | 1.1348 |
| Homeownership | 0.1944 | 0.0011 | 1.2146 | 0.2938 | 0.0142 | 1.3415 | 0.1653 | 0.0189 | 1.1797 |
| Homeownership * Children to support | 0.1166 | 0.1756 | 1.3648 | 0.1172 | 0.4757 | 1.6322 | 0.0195 | 0.8562 | 1.2030 |
| Non-Retirement Investment | 0.0983 | 0.0380 | 1.1033 | 0.3374 | 0.0237 | 1.4013 | 0.0816 | 0.1052 | 1.0850 |
| Intercept | -0.4108 | 0.0116 | 0.6631 | -0.0105 | 0.9707 | 0.9896 | -0.3259 | 0.2400 | 0.7219 |
| Control Variables | | Y | | | Y | | | Y | |
| Pseudo R-sq. | | 0.2314 | | | 0.1993 | | | 0.1717 | |
| N | | 5447 | | | 1269 | | | 4178 | |
| Value Weighted | | | | | | | | | |

**Table5** Interaction term with a different age group

| Variables | Model11 (age group 25-69) | | | Model12 (age group 25-69) | | |
|---|---|---|---|---|---|---|
| | Estimate | Standard error | Pr > ChiSq | Estimate | Standard error | Pr > ChiSq |
| KH score | 0.0994 | 0.0318 | 0.0018 | 0.0483 | 0.0387 | 0.2116 |
| KH score * Children to support | | | | 0.1262 | 0.0536 | 0.0185 |
| Financial Socialization | 0.1699 | 0.0533 | 0.0014 | 0.2109 | 0.0707 | 0.0029 |
| Financial Socialization * Children to support | | | | -0.1031 | 0.1045 | 0.3237 |
| Propensity to Plan | 0.0351 | 0.0135 | 0.0097 | 0.0081 | 0.0179 | 0.6518 |
| Propensity to Plan * Children to support | | | | 0.0638 | 0.0269 | 0.0179 |
| Subjective FK | 0.0457 | 0.0190 | 0.0162 | 0.0177 | 0.0250 | 0.4783 |
| Subjective FK * Children to support | | | | 0.0705 | 0.0376 | 0.0610 |
| Children that I support financially | 0.2191 | 0.0460 | <.0001 | -0.0280 | 0.1848 | 0.8794 |
| Homeownership | 0.2536 | 0.0511 | <.0001 | 0.2608 | 0.0513 | <.0001 |
| Non-Retirement Investment | 0.1296 | 0.0515 | 0.0118 | 0.1331 | 0.0516 | 0.0099 |
| Intercept | -0.0638 | 0.1693 | 0.7063 | 0.0146 | 0.1845 | 0.9368 |
| Control Variables | | Y | | | Y | |
| Pseudo R-sq. | | 0.2133 | | | 0.2168 | |
| N | | 4485 | | | 4485 | |
| Value Weighted | | | | | | |

**Table6.** Pure effect and interaction (KH score split into two)

| variables | Model13(Total) | | | Model14 (Interaction term) | | |
|---|---|---|---|---|---|---|
| | Estimate | Standard error | Pr > ChiSq | Estimate | Standard error | Pr > ChiSq |
| KH score (General FK) | 0.1166 | 0.0315 | 0.0002 | 0.0713 | 0.0373 | 0.0561 |
| KH score (General FK) * Children to support | | | | 0.1222 | 0.0572 | 0.0328 |
| Understanding of Life Insurance | 0.1213 | 0.0429 | 0.0047 | 0.1233 | 0.0554 | 0.0261 |
| Understanding of Life Insurance * Children to support | | | | 0.0008 | 0.0872 | 0.9926 |
| Financial Socialization | 0.1924 | 0.0498 | 0.0001 | 0.2272 | 0.0636 | 0.0004 |
| Financial Socialization * Children to support | | | | -0.1029 | 0.0982 | 0.2948 |
| Propensity to Plan | 0.0381 | 0.0125 | 0.0022 | 0.0226 | 0.0158 | 0.1527 |
| Propensity to Plan * Children to support | | | | 0.0431 | 0.0254 | 0.0894 |
| Subjective FK | 0.0396 | 0.0176 | 0.0244 | 0.0161 | 0.0223 | 0.4691 |
| Subjective FK * Children to support | | | | 0.0701 | 0.0355 | 0.0487 |
| Children that I support financially | 0.1825 | 0.0437 | <.0001 | -0.1494 | 0.1882 | 0.4273 |
| Homeownership | 0.2346 | 0.0483 | <.0001 | 0.1905 | 0.0596 | 0.0014 |
| Homeownership * Children to support | | | | 0.1169 | 0.0861 | 0.1745 |
| Non-Retirement Investment | 0.0933 | 0.0472 | 0.0482 | 0.0972 | 0.0474 | 0.0402 |
| Intercept | -0.5972 | 0.1531 | <.0001 | -0.4856 | 0.1667 | 0.0036 |
| Control Variables | | Y | | | Y | |
| N | | 5447 | | | 5447 | |
| Value Weighted | | | | | | |

**Table 7.** Health Insurance Dependent Variable

| Variables | Model15 (Total, Health) | | | Model16 (FPL < 200%) | | | Model17 (FPL +200%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Standard error | Pr > ChiSq | Estimate | Standard error | Pr > ChiSq | Estimate | Standard error | Pr > ChiSq |
| KH score | 0.2082 | 0.0355 | <.0001 | 0.1351 | 0.0689 | 0.0498 | 0.2517 | 0.0425 | <.0001 |
| KH score * Children to support | -0.0295 | 0.0547 | 0.5895 | 0.0808 | 0.1064 | 0.4473 | -0.1281 | 0.0688 | 0.0627 |
| Financial Socialization | 0.2135 | 0.0654 | 0.0011 | 0.1871 | 0.1199 | 0.1186 | 0.2631 | 0.0793 | 0.0009 |
| Financial Socialization * Children to support | -0.0673 | 0.1016 | 0.5078 | 0.0497 | 0.1815 | 0.7844 | -0.185 | 0.1259 | 0.1418 |
| Propensity to Plan | 0.0095 | 0.0162 | 0.5599 | 0.047 | 0.0292 | 0.1082 | -0.0116 | 0.0197 | 0.5573 |
| Propensity to Plan * Children to support | -0.0267 | 0.0263 | 0.3087 | -0.0769 | 0.0458 | 0.0927 | 0.0083 | 0.0329 | 0.8018 |
| Subjective FK | -0.0073 | 0.0223 | 0.7426 | -0.0722 | 0.0371 | 0.0515 | 0.0291 | 0.0286 | 0.3089 |
| Subjective FK * Children to support | 0.0485 | 0.0357 | 0.175 | 0.1246 | 0.0572 | 0.0294 | -0.0123 | 0.048 | 0.7975 |
| Children that I support financially | -0.2234 | 0.1788 | 0.2115 | -0.6065 | 0.2776 | 0.0289 | 0.2033 | 0.2482 | 0.4129 |
| Homeownership | 0.1688 | 0.0615 | 0.006 | 0.1809 | 0.1107 | 0.1021 | 0.1836 | 0.0763 | 0.0162 |
| Homeownership * Children to support | 0.0209 | 0.0877 | 0.812 | -0.1106 | 0.1543 | 0.4734 | 0.0128 | 0.1144 | 0.9108 |
| Non-Retirement Investment | 0.2418 | 0.0535 | <.0001 | 0.2151 | 0.1465 | 0.1421 | 0.2474 | 0.0581 | <.0001 |
| Intercept | 0.0766 | 0.1662 | 0.6448 | 0.5319 | 0.2636 | 0.0436 | -0.0718 | 0.2908 | 0.8049 |
| Control Variables | | Y | | | Y | | | Y | |
| Pseudo R-sq. | | 0.2041 | | | 0.1579 | | | 0.1213 | |
| N | | 5447 | | | 1269 | | | 4178 | |

**Appendix A.** Standardized Variables (Mean = 0, Std =1)

| Variables | Model18 (Life Insurance) | | | Model19 (FPL < 200%) | | | Model20 (FPL + 200%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Standard error | Pr > ChiSq | Estimate | Standard error | Pr > ChiSq | Estimate | Standard error | Pr > ChiSq |
| KH score | 0.0868 | 0.0234 | 0.0002 | 0.0927 | 0.0496 | 0.0615 | 0.0796 | 0.0268 | 0.0029 |
| Financial Socialization | 0.0787 | 0.0204 | 0.0001 | 0.1100 | 0.0414 | 0.0078 | 0.0712 | 0.0238 | 0.0028 |
| Propensity to Plan | 0.064 | 0.0208 | 0.0021 | 0.0559 | 0.0422 | 0.1857 | 0.0687 | 0.0241 | 0.0044 |
| Subjective FK | 0.0465 | 0.0216 | 0.0317 | 0.0152 | 0.0389 | 0.6951 | 0.0657 | 0.0268 | 0.0141 |
| Children that I support financially | 0.1066 | 0.0220 | <.0001 | 0.0420 | 0.0486 | 0.3875 | 0.1206 | 0.0251 | <.0001 |
| Homeownership | 0.1165 | 0.0241 | <.0001 | 0.1699 | 0.0439 | 0.0001 | 0.0828 | 0.0295 | 0.0050 |
| Non-Retirement Investment | 0.0422 | 0.0210 | 0.0446 | 0.1464 | 0.0661 | 0.0268 | 0.0360 | 0.0224 | 0.1069 |
| Intercept | -0.0582 | 0.0185 | 0.0016 | -0.8796 | 13.8795 | 0.9495 | 0.0292 | 0.0410 | 0.4767 |
| Control Variable | | Y | | | Y | | | Y | |
| Pseudo R-sq. | | 0.2306 | | | 0.1887 | | | 0.1704 | |
| N | | 5447 | | | 1269 | | | 4178 | |

**Appendix B** Financial Well-Being and Life Insurance Demand

| variables | Model21 (Total) | | | Model22 (FPL <200%) | | | Model23 (FPL +200%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Standard error | p-value | Estimate | Standard error | p-value | Estimate | Standard error | p-value |
| Life Insurance | 0.5161 | 0.3369 | 0.1256 | 1.2601 | 0.797 | 0.1141 | 0.3215 | 0.3658 | 0.3795 |
| KH score | 1.0678 | 0.2358 | <.0001 | -0.6764 | 0.5288 | 0.2011 | 1.7485 | 0.2608 | <.0001 |
| Financial Socialization | 2.3327 | 0.4044 | <.0001 | 1.5746 | 0.8616 | 0.0679 | 2.5186 | 0.4573 | <.0001 |
| Propensity to Plan | 0.7147 | 0.1004 | <.0001 | 0.7643 | 0.2137 | 0.0004 | 0.642 | 0.1133 | <.0001 |
| Subjective FK | 2.4214 | 0.1413 | <.0001 | 1.8268 | 0.2671 | <.0001 | 2.7623 | 0.1706 | <.0001 |
| Children that I support financially | -1.9314 | 0.359 | <.0001 | -1.4535 | 0.8437 | 0.0852 | -1.959 | 0.402 | <.0001 |
| Homeownership | 1.9019 | 0.4047 | <.0001 | -0.1648 | 0.7952 | 0.8359 | 3.2422 | 0.4777 | <.0001 |
| Non-Retirement Investment | 3.9621 | 0.3891 | <.0001 | 6.5706 | 1.3871 | <.0001 | 3.4716 | 0.3926 | <.0001 |
| Intercept | 38.6934 | 1.2273 | <.0001 | 40.7892 | 2.3574 | <.0001 | 37.1825 | 2.1215 | <.0001 |
| Control Variables | | Y | | | Y | | | Y | |
| Pseudo R-sq. | | 0.3651 | | | 0.2074 | | | 0.3351 | |
| N | | 5447 | | | 1269 | | | 4178 | |

**Appendix C.** Principal Component analysis

| Propensity to Plan | PCA scores |
|---|---|
| I consult my budget to see how much money I have left | 0.4690 |
| I actively consider the steps I need to take to stick to my budget | 0.5237 |
| I set financial goals for what I want to achieve with my money | 0.4956 |
| I prepare a clear plan of action w/ detailed steps to achieve my financial goals | 0.5101 |
| Model fit of PCA | |
| Eigenvalue | 2.7746 |
| Proportion of variance explained by the component | 0.6936 |



**Appendix D.** Factor Analysis for Tetrachoric Correlation

| Financial Socialization | Score |
|---|---|
| Discussed family financial matters with me | 0.1767 |
| Spoke to me about the importance of saving | 0.2022 |
| Discussed how to establish a good credit rating | 0.1908 |
| Taught me how to be a smart shopper | 0.1938 |
| Taught me that my actions determine my success in life | 0.1899 |
| Provided me with a regular allowance | 0.1382 |
| Provided me with a savings account | 0.1592 |
| Model fit of Factor Analysis | |
| Eigenvalue | 4.4137 |
| Proportion of variance explained by the factor | 0.6305 |

## Appendix E. KH Score and Understanding of Life Insurance

| Variables Names | Knoll and Houts Financial Knowledge | Parameter | Estimate | Standard Error | Pr > \|t\| |
|---|---|---|---|---|---|
| KHKNOWL1 | Understanding of long-term returns on investment | Difficulty | -0.31575 | 0.0334 | <.0001 |
| | | Slope | 1.04705 | 0.05464 | <.0001 |
| KHKNOWL2 | Understanding of stocks vs bond vs savings volatility | Difficulty | -1.44908 | 0.05267 | <.0001 |
| | | Slope | 1.59982 | 0.09061 | <.0001 |
| KHKNOWL3 | Understanding of benefits of diversification | Difficulty | -0.57313 | 0.0304 | <.0001 |
| | | Slope | 1.46812 | 0.07383 | <.0001 |
| KHKNOWL4 | Understanding of possibility of stock market losses | Difficulty | -1.55963 | 0.0666 | <.0001 |
| | | Slope | 1.21747 | 0.06918 | <.0001 |
| KHKNOWL5 | Understanding of life insurance | | | | |
| KHKNOWL6 | Understanding of possibility of housing market losses | Difficulty | -2.09262 | 0.08813 | <.0001 |
| | | Slope | 1.51689 | 0.09997 | <.0001 |
| KHKNOWL7 | Understanding of credit card minimum payments | Difficulty | 0.4963 | 0.04185 | <.0001 |
| | | Slope | 0.88374 | 0.04999 | <.0001 |
| KHKNOWL8 | Understanding of relationship of bonds and interest rates | Difficulty | 1.48078 | 0.12152 | <.0001 |
| | | Slope | 0.52641 | 0.04274 | <.0001 |
| KHKNOWL9 | Understanding of mortgage term length on total interest paid | Difficulty | -1.8827 | 0.07362 | <.0001 |
| | | Slope | 1.57557 | 0.0984 | <.0001 |